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Active virtual guides as an apparatus for augmented based telemanipulation system on the Internet

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Abstract:

In many current teleoperation architectures, remote tasks are indirectly performed by a human operator (HO) by means of a virtual environment consisting in a virtual representation of the remote site. In order to achieve virtual tasks, the interaction of the HO and the virtual representation is monitored. Monitoring is subsequently translated into a sequence of instructions sent to the remote robot for actual execution. This paper focuses on different strategies designed to allow friendly operator interaction with the virtual representation in order to achieve remote tasks via the Internet. The use of active virtual **guides** to assist the HO in performing simple or complex tasks with enhanced performance (speed, precision, safety) is also discussed. Techniques such as virtual reality (VR), **augmented reality** (AR) combined with Internet-based programming facilities are investigated as proposed teleoperation system named ARITI (acronym for **Augmented Reality** for Telerobotic applications via Internet).

Index Terms:

[Internet](#) [augmented reality](#) [human factors](#) [telerobotics](#) [user interfaces](#) [ARITI](#) [Internet](#) [virtual guides](#) [augmented reality](#) [human operator](#) [monitoring](#) [remote robot](#) [remote telemanipulation system](#) [teleoperation architectures](#) [telerobotics](#) [user-friendly operation](#) [virtual reality](#)

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